Columbia Defense

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Overview of the game

➢ Attackers have 5 parallel pathways towards our campus

➢ All of the attackers and defenders have different kinds of features and attack techniques

➢ Killing attackers will make some money for the user to build more defenders (Attempted)
Structure:
Hardware: Image & sound

➢ Image category and size: background & attackers & defenders & bullets

➢ MatLab: size, peripheral background, format conversion
Hardware: VGA

- Background including the map of the game, the location we set our defender, the path towards our campus, etc
- 4 different defenders and 3 attackers and each has different appearance
- Different attacking, hitting and moving effect for attackers and defenders
- The game money system and defenders selection part should be shown on the specific part of the screen
Score Counter*

“Number” Graphs, hopping between graphs

ROM storage: plan quitted

7-segment (pure HARDWARE)

Non connected with other part already.

Video: achieved display “bAI.yAng”
Hardware: Sprite

➢ Action: Two pictures exchange (10 delay time)
Hardware: AUD

➢ Inter-Integrated Circuit (I\(^2\)C) protocol: 16-bit data take 3 acks

➢ PLL clock: 11.2893Mhz

➢ Game Sound Effect:

Once there comes a request (attracting) the corresponding short audio will be triggered and play for one time
Hardware: PS2 controller

- L1 and L2: The PS button, the select button and the start button.
- R1 and R2
- The D Pad: Up, Down, Left, Right
- Left Analog Stick: L3
- Right Analog Stick: R3
- Triangle, Circle, Square and X
Software

➢ User interface & main function

➢ Control of every attacker and defender (3 behavior most): move, attack and die

➢ Control when sounds need to work
Challenges

➢ ROM storage
  Solution attempts: DDR, repetitive graph and audio pieces, etc.

➢ We have to assign every hero and attacker their own function, the workload is somehow multiplied.

➢ Picture Tailoring without white “margin-noise”
  Attempts: select graphs with sharp color switch
Highlight Advantages

➢ Picture display effects.

➢ Multiple functions for each hero, complex game structure.
Further design ideas

➢ Complete the unfinished goals
  Digit counter, upper blank area filling with proper background pictures, dying effects (ash), etc.

➢ More defenders and attackers with different feature abilities; create more different levels of game; balance the difficulty of each levels
THANK YOU